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     (FILE 'HOME' ENTERED AT 17:48:03 ON 19 APR 2005)

     FILE 'AGRICOLA, MEDLINE, CAPLUS, BIOSIS' ENTERED AT 17:48:06 ON 19 APR
     2005
L1            36 S MANNOSIDASE AND GNT
L2            21 DUP REM L1 (15 DUPLICATES REMOVED)

     FILE 'STNGUIDE' ENTERED AT 17:49:33 ON 19 APR 2005
L3             0 S GNT AND MAN AND MNN

     FILE 'AGRICOLA, MEDLINE, CAPLUS, BIOSIS' ENTERED AT 17:54:03 ON 19 APR
     2005
L4             0 S GNT AND MAN AND MNN
L5             0 S GNT A AND MNN
L6             0 S GNT AND MNN
L7             3 S MASE AND GNT
L8             1 DUP REM L7 (2 DUPLICATES REMOVED)
L9             1 S MNN AND OCH
L10           24 S OCH1 AND (MNN1 OR MNN4)
L11           20 DUP REM L10 (4 DUPLICATES REMOVED)
L12            7 S L11 AND PY<2000

     FILE 'STNGUIDE' ENTERED AT 18:05:01 ON 19 APR 2005

     FILE 'AGRICOLA, MEDLINE, CAPLUS, BIOSIS' ENTERED AT 18:06:58 ON 19 APR
     2005
L13            0 S L2 AND URACIL
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(FILE 'HOME' ENTERED AT 17:48:03 ON 19 APR 2005)

FILE 'AGRICOLA, MEDLINE, CAPLUS, BIOSIS' ENTERED AT 17:48:06 ON 19 APR 2005

L1 36 S MANNOSIDASE AND GNT
L2 21 DUP REM L1 (15 DUPLICATES REMOVED)

FILE 'STNGUIDE' ENTERED AT 17:49:33 ON 19 APR 2005

L3 0 S GNT AND MAN AND MNN

FILE 'AGRICOLA, MEDLINE, CAPLUS, BIOSIS' ENTERED AT 17:54:03 ON 19 APR 2005

L4 0 S GNT AND MAN AND MNN
L5 0 S GNT A AND MNN
L6 0 S GNT AND MNN
L7 3 S MASE AND GNT
L8 1 DUP REM L7 (2 DUPLICATES REMOVED)

L2 ANSWER 17 OF 21 MEDLINE on STN DUPLICATE 6
AN 1999391231 MEDLINE
DN PubMed ID: 10463590
TI Unusually high expression of N-acetylglucosaminyltransferase-IVa in human choriocarcinoma cell lines: a possible enzymatic basis of the formation of abnormal biantennary sugar chain.
AU Takamatsu S; Oguri S; Minowa M T; Yoshida A; Nakamura K; Takeuchi M; Kobata A
CS Central Laboratories for Key Technology, KIRIN Brewery Co., Ltd., Yokohama, Japan.
SO Cancer research, (1999 Aug 15) 59 (16) 3949-53.
Journal code: 2984705R. ISSN: 0008-5472.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199909
ED Entered STN: 19990925
Last Updated on STN: 19990925
Entered Medline: 19990916
AB Structural analysis of the sugar chains of human chorionic gonadotropin (hCG) has revealed that abnormal biantennary structures appear specifically on hCG in the urine of choriocarcinoma patients. However, the enzymatic and molecular mechanisms of the biosynthesis of abnormal biantennary sugar chains have not yet been elucidated. In this report, the enzyme activities and the expression levels of mRNAs of N-acetylglucosaminyltransferases (**GnT**)-I to -V, beta-1,4-galactosyltransferase, and alpha-**mannosidase** II in normal human placentae and three human choriocarcinoma cell lines were investigated. **GnT**-IV activities in choriocarcinoma cell lines were increased from 16- to 66-fold and **GnT**-III activity was increased from 15- to 25-fold as compared with those in human placentae, whereas other enzyme activities were not increased significantly. The mRNA expression levels generally correlated with their enzyme activities. Among the two **GnT**-IV genes found in human tissues only **GnT**-IVa gene was strongly expressed in the cancer cells: from three to seven times as much as in the normal tissue, whereas that of **GnT**-IVb remained constant. On the basis of these results, we proposed that ectopic expression of **GnT**-IVa gene should occur along with the malignancy of trophoblastic tissues, and that the increased **GnT**-IV activity should be the main cause of the formation of abnormal biantennary sugar chains in choriocarcinoma. A possible enzymatic basis of the biosynthesis of abnormal biantennary sugar chains is discussed.

L12 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2005 ACS on STN
AN 1997:681739 CAPLUS
DN 127:356942
TI Cloning of gene **MNN4** gene of Saccharomyces cerevisiae preparation of S. cerevisiae mutants for producing high-mannose type neutral oligosaccharides
IN Chigami, Yoshifumi; Shinma, Yoichi; Kotani, Tetsuji
PA Agency of Industrial Sciences and Technology, Japan
SO Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 09266792	A2	19971014	JP 1996-75667	19960329 <--
PRAI JP 1996-75667		19960329		

AB The Saccharomyces cerevisiae **MNN4** gene, which is involved in mannosylphosphate transfer from GDP-mannose to N-linked oligosaccharide, is cloned and its amino acid sequence deduced (1178 residues). The gene is mutagenized to prepare S. cerevisiae mutant Δmmn4, the mannosylphosphate content in which is drastically decreased. S. cerevisiae (Δ **mnn4**) is then used to prepare a triple mutant, Δ **mnn4**Δ **och1**Δ **mnn1**, by crossing with S. cerevisiae (Δ **och1**Δ **mnn1**). The triple mutant is able to produce high-mannose type (e.g. Man8GlcNAc2) neutral oligosaccharides and thus is useful in manufacturing human-type glycoproteins that have low antigenicity.

L12 ANSWER 1 OF 7 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN

AN 94:34424 AGRICOLA

DN IND20389850

TI Structure of the N-linked oligosaccharides that show the complete loss of alpha-1,6-polymannose outer chain from **och1**, **och1** **mnn1**, and **och1** **mnn1** alg3 mutants of Saccharomyces cerevisiae.

AU Nakanishi-Shindo, Y.; Nakayama, K.; Tanaka, A.; Toda, Y.; Jigami, Y.

AV DNAL (381 J824)

SO The Journal of biological chemistry, **Dec 15, 1993.** Vol. 268, No. 35. p. 26338-26345
Publisher: Baltimore, Md. : American Society for Biochemistry and Molecular Biology.
CODEN: JBCHA3; ISSN: 0021-9258

NTE Includes references

CY Maryland; United States

DT Article

FS U.S. Imprints not USDA, Experiment or Extension

LA English

AB The periplasmic invertase was purified from Saccharomyces cerevisiae **och1**::LEU2 disruptant cells (delta **och1**), which have a defect in elongation of the outer chain attached to the N-linked core oligosaccharides (Nakayama, K., Nagasu, T., Shimma, Y., Kuromatsu, J., and Jigami, Y. (1992) EMBO J. 11, 2511-2519). Structural analysis of the pyridylaminated (PA) neutral oligosaccharides released by hydrazinolysis and N-acetylation confirmed that the **och1** mutation causes a complete loss of the alpha-1,6-polymannose outer chain, although the PA oligosaccharides (Man9GlcNAc21-PA and Man10GlcNAc2-PA), in which one or two alpha-1,3-linked mannose(s) attached to the endoplasmic reticulumn (ER)-form core oligosaccharide (Man8GlcNAc2) were also detected. Analysis of the delta **och1** **mnn1** strain oligosaccharides released from total cell mannoprotein revealed that the delta **och1** **mnn1** mutant eliminates the alpha-1,3-mannose attached to the core and accumulates predominantly a single ER-form oligosaccharide species (Man8GlcNAc2), suggesting a potential use of this strain as a host cell to produce glycoproteins containing mammalian high mannose type oligosaccharides. The delta **och1** **mnn1** alg3 mutants accumulated Man5GlcNAc2 and Man8GlcNAc2 in total cell mannoprotein, confirming the lack of outer chain addition to the incomplete corelike oligosaccharide and the leaky phenotype of the alg3 mutation. All the results suggest that the **OCH1** gene encodes an alpha-1,6-mannosyltransferase that is functional in the initiation of alpha-1,6-polymannose outer chain addition to the N-linked core oligosaccharide (Man5GlcNAc2 and Man8GlcNAc2) in yeast.

L12 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2005 ACS on STN
AN 1995:235077 CAPLUS
DN 122:8218
TI Recombinant manufacture of mannose-high proteins with yeast mutant
IN Chikami, Yoshifumi; Nakanishi, Yoko; Nakayama, Kenichi; Tanaka, Atsushi
PA Kogyo Gijutsuin, Japan; Asahi Chemical Ind
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06277086	A2	19941004	JP 1992-297469	19921106 <--
	JP 3091851	B2	20000925		
PRAI	JP 1992-297469		19921106		

AB Mammalian mannose-high proteins that having sugar chains comprising 2 mols. of N-acetylglucosamine and 8 mols. of mannose are manufactured by culturing (Δ **och1**, **mnn1**) Saccharomyces cerevisiae having mutation at **OCH1** and **Mnn1** genes. Manufacture of mannose-high invertase with S. cerevisiae (Δ **och1**) and isolation of the enzyme was shown. Also shown was the manufacture of mannose-high proteins with S. cerevisiae (Δ **och1**. **mnn1**) double mutant.

L12 ANSWER 7 OF 7 CAPLUS COPYRIGHT 2005 ACS on STN
AN 1994:628884 CAPLUS
DN 121:228884
TI Production of human glycoprotein pancreatic α-amylase in Δ **och1 mnn1** mutant of Saccharomyces cerevisiae
AU Nakayama, Kenichi; Shimma, Yohichi; Shindo, Yoko; Jigami, Yoshifumi
CS Natl. Inst. Biosci. Hum.-Technol., Tsukuba, 305, Japan
SO Seimei Kogaku Kogyo Gijutsu Kenkyusho Kenkyu Hokoku (**1994**), 2(4), 7-10
CODEN: SKGIEM; ISSN: 0919-5351
DT Journal
LA Japanese
AB **OCH1** protein is a mannosyltransferase responsible for the mannose outer chain elongation of N-linked oligosaccharides of mannoprotein in Saccharomyces cerevisiae. The oligoscaccharides of **OCH1** gene disruptant (Δ **och1**) show the lack of outer chain except α-1,3-mannose addition N-linked oligosaccharide chain of total mannoprotein from Δ **och1 mnn1** double mutant shows a complete lack of mannose outer chain, and its chemical structure is identical to that of mammalian high mannose type oligosaccharides. In this paper the authors have tried to produce human pancreatic α-amylase by using this double mutant yeast cells. Western-blot anal. indicated that the size of α-amylase produced by the mutant cells was smaller than that produced by the wild type cells. The result suggests that the length of oligosaccharide chain of α-amylase produced by Δ **och1** mm1 double mutant may be identical with that of mammalian high mannose type oligoscaccharides, indicating that Δ **och1** mm1 double mutant is useful for the production of human glycoprotein containing mammalian high mannose type oligoscaccharides.

L2 ANSWER 18 OF 21 MEDLINE on STN DUPLICATE 7
AN 2000035792 MEDLINE
DN PubMed ID: 10571015
TI HEMPAS. Hereditary erythroblastic multinuclearity with positive acidified serum lysis test.
AU Fukuda M N
CS Glycobiology Program, The Burnham Institute, La Jolla Cancer Research Center, CA 92037, USA.. michiko@burnham-inst.org
SO Biochimica et biophysica acta, (1999 Oct 8) 1455 (2-3) 231-9. Ref: 55
Journal code: 0217513. ISSN: 0006-3002.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LA English
FS Priority Journals
EM 199912
ED Entered STN: 20000113
Last Updated on STN: 20000113
Entered Medline: 19991208
AB Congenital dyserythropoietic anemia type II or HEMPAS (hereditary erythroblastic multinuclearity with positive acidified serum lysis test) is a genetic anemia in humans caused by a glycosylation deficiency. Erythrocyte membrane glycoproteins, such as band 3 and band 4.5, which are normally glycosylated with polylactosamines lack these carbohydrates in HEMPAS. Polylactosamines accumulate as glycolipids in HEMPAS erythrocytes. Analysis of N-glycans from HEMPAS erythrocyte membranes revealed a series of incompletely processed N-glycan structures, indicating defective glycosylation at N-acetylglucosaminyltransferase II (**GnT**-II) and/or alpha-**mannosidase** II (MII) steps.
Genetic analysis has identified two cases from England in which the MII gene is defective. Mutant mice in which the MII gene was inactivated by homologous recombination resulted in a HEMPAS-like phenotype. On the other hand, linkage analysis of HEMPAS cases from southern Italy excluded MII and **GnT**-II as the causative gene, but identified a gene on chromosome 20q11. HEMPAS is therefore genetically heterogeneous. Regardless of which gene is defective, HEMPAS is characterized by incomplete processing of N-glycans. The study of HEMPAS will identify hitherto unknown factors affecting N-glycan synthesis.

L2 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:86851 CAPLUS
DN 130:193212
TI Mechanism in the branch formation of Asn-linked oligosaccharides
AU Minowa, Mari Toba; Takeuchi, Makoto
CS Cent. Lab. Key Technol., Kirin Brew. Co., Ltd., Yokohama, 236-0004, Japan
SO Oyo Toshitsu Kagaku (1998), 45(4), 407-414
CODEN: OTKAE3; ISSN: 1340-3494
PB Nippon Oyo Toshitsu Kagakkai
DT Journal; General Review
LA Japanese
AB A review with 38 refs. Asn-linked oligosaccharides on glycoproteins are divided into four subgroups: mannan-, high-mannose-, hybrid- and complex-type. Complex-type oligosaccharides have SA-Gal-GlcNAc-branches on terminal mannosides of the core structure (Man3GlcNAc2), and they are identified as a bi-, tri-, or tetra-antennary structure depending on how many branches they have. A bisect structure that has a GlcNAc linked to the β1-4 mannose of the core structure has also been observed in many species. The branched portions of oligosaccharides affect 1) the interaction of the outer parts of oligosaccharides with other mols. such as lectins by increasing the multivalency of ligands, and 2) the turnover of proteins in circulation mainly because of the bulky structure of branched oligosaccharides. Several factors determine oligosaccharide branchings. The enzymes that catalyze branchings are N-acetylglucosaminyltransferases, some of which require products of other enzymes or inhibit actions of other enzymes. Furthermore, the timing when a-**mannosidase** 11 and galactosyltransferase react on the substrate oligosaccharides may also influence the number of branches. The activities and distribution in the Golgi apparatus of these enzymes are enzymic factors that determine the branchings. A higher structure of peptide backbones may also influence the size of sugar chains. All the mammalian enzymes regulating branched structures are now available because **GnT**-IV, the missing link of **GnTs**, has been purified and cloned by our group. Several attempts to alter sugar-chain structures by using some of those enzymes have already been reported. In the future, a method to freely control the structures of Asn-linked oligosaccharides will be developed by regulating the expressions of these enzymes.

L2 ANSWER 11 OF 21 MEDLINE on STN DUPLICATE 4
AN 2003208701 MEDLINE
DN PubMed ID: 12603202
TI Synthesis of paucimannose N-glycans by Caenorhabditis elegans requires prior actions of UDP-N-acetyl-D-glucosamine:alpha-3-D-mannoside beta1,2-N-acetylglucosaminyltransferase I, alpha3,6-**mannosidase** II and a specific membrane-bound beta-N-acetylglucosaminidase.
AU Zhang Wenli; Cao Pinjiang; Chen Shihao; Spence Andrew M; Zhu Shaoxian; Staudacher Erika; Schachter Harry
CS Department of Structural Biology and Biochemistry, The Hospital for Sick Children, 555 University Avenue, Toronto, Ontario, Canada M5G 1X8.
SO Biochemical journal, (2003 May 15) 372 (Pt 1) 53-64.
Journal code: 2984726R. ISSN: 0264-6021.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200307
ED Entered STN: 20030506
Last Updated on STN: 20030704
Entered Medline: 20030703
AB We have previously reported three Caenorhabditis elegans genes (gly-12, gly-13 and gly-14) encoding UDP- N -acetyl-D-glucosamine:alpha-3-D-mannoside beta1,2- N -acetylglucosaminyltransferase I (**GnT** I), an enzyme essential for hybrid and complex N-glycan synthesis. GLY-13 was shown to be the major **GnT** I in worms and to be the only **GnT** I cloned to date which can act on [Manalpha1,6(Manalpha1,3)Manalpha1,6](Manalpha1,3)Manbeta1, 4GlcNAcbeta1,4GlcNAc-R, but not on Manalpha1,6(Manalpha1,3)Manbeta1- O -R substrates. We now report the kinetic constants, bivalent-metal-ion requirements, and optimal pH, temperature and Mn(2+) concentration for this unusual enzyme. C. elegans glycoproteins are rich in oligomannose (Man(6-9)GlcNAc(2)) and 'paucimannose' Man(3-5)GlcNAc(2)(+/-Fuc) N-glycans, but contain only small amounts of complex and hybrid N-glycans. We show that the synthesis of paucimannose Man(3)GlcNAc(2) requires the prior actions of **GnT** I, alpha3,6-**mannosidase** II and a membrane-bound beta- N -acetylglucosaminidase similar to an enzyme previously reported in insects. The beta- N -acetylglucosaminidase removes terminal N -acetyl-D-glucosamine from the GlcNAcbeta1, 2Manalpha1,3Manbeta- arm of Manalpha1,6(GlcNAcbeta1,2Manalpha1,3) Manbeta1,4GlcNAcbeta1,4GlcNAc-R to produce paucimannose Man(3)GlcNAc(2) N-glycan. N -acetyl-D-glucosamine removal was inhibited by two N -acetylglucosaminidase inhibitors. Terminal GlcNAc was not released from [Manalpha1,6(Manalpha1,3)Manalpha 1,6] (GlcNAcbeta1,2Manalpha1,3)Manbeta1, 4GlcNAcbeta1,4GlcNAc-R nor from the GlcNAcbeta1,2Manalpha1,6Manbeta- arm. These findings indicate that GLY-13 plays an important role in the synthesis of N-glycans by C. elegans and that therefore the worm should prove to be a suitable model for the study of the role of **GnT** I in nematode development.

L2 ANSWER 10 OF 21 MEDLINE on STN DUPLICATE 3
AN 2003164874 MEDLINE
DN PubMed ID: 12681359
TI Alteration in the expression of early stage processing enzymes of N-glycan during myeloid and monocytoid differentiation of HL-60 cells.
AU Zhao Jia-Hong; Zhang Ying; Zhang Xia-Ying; Chen Hui-Li
CS Key Laboratory of Glycoconjugate Research, Department of Biochemistry, Ministry of Health, School of Medicine, Fudan University, 200032, Shanghai, China.
SO Leukemia research, (2003 Jul) 27 (7) 599-605.
Journal code: 7706787. ISSN: 0145-2126.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200307
ED Entered STN: 20030409
Last Updated on STN: 20030702
Entered Medline: 20030701
AB The expressions of the enzymes participating in the early stage of N-glycan processing, Golgi alpha-Mase-I, alpha-Mase-II and **GnT**-I, **GnT**-II, were studied before and after HL-60 cells were differentiated to myelocytes or monocytes induced by ATRA or PMA, respectively. It was found that alpha-Mase-I activity and **GnT**-I mRNA were decreased by both ATRA and PMA, while alpha-Mase-II and **GnT**-II were altered insignificantly. The down-regulation of alpha-Mase-I and **GnT**-I was cell specific, since ATRA up-regulated alpha-Mase-I and **GnT**-I in the H7721 hepatocarcinoma cell line. However, in H7721 cells, PMA also decreased alpha-Mase-I and **GnT**-I, and both ATRA and PMA also did not obviously change the expressions of alpha-Mase-II and **GnT**-II.

L2 ANSWER 6 OF 21 MEDLINE on STN DUPLICATE 1
AN 2004507426 MEDLINE
DN PubMed ID: 15476709
TI The synthesis of a series of modified mannotrisaccharides as probes of the enzymes involved in the early stages of mammalian complex N-glycan formation.
AU Tarling Chris A; Withers Stephen G
CS Department of Chemistry, 2036 Main Mall, University of British Columbia, Vancouver, BC, Canada V6T 1Z1.
SO Carbohydrate research, (2004 Oct 20) 339 (15) 2487-97.
Journal code: 0043535. ISSN: 0008-6215.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200504
ED Entered STN: 20041013
Last Updated on STN: 20050406
Entered Medline: 20050405
AB A series of mannotrisaccharides were synthesized by two distinct chemical pathways as probes of the enzymes involved in the early stages of mammalian complex N-glycan formation. Methyl (alpha-D-mannopyranosyl)-(1-->3)-[(alpha-D-mannopyranosyl)-(1-->6)]-beta-D-mannopyranoside (6) and methyl (2-deoxy-2-fluoro-alpha-D-mannopyranosyl)-(1-->3)-[(2-deoxy-2-fluoro-alpha-D-mannopyranosyl)-(1-->6)]-beta-D-mannopyranoside (8) were rapidly synthesized from unprotected methyl beta-D-mannopyranoside (12). Methyl (2-deoxy-2-fluoro-alpha-D-mannopyranosyl)-(1-->3)-[(alpha-D-mannopyranosyl)-(1-->6)]-beta-D-mannopyranoside (7) and methyl (alpha-D-mannopyranosyl)-(1-->3)-[(2-deoxy-2-fluoro-alpha-D-mannopyranosyl)-(1-->6)]-beta-D-mannopyranoside (9) were synthesized from the common orthogonally protected precursor methyl 2-O-acetyl-4,6-O-benzylidene-beta-D-mannopyranoside (15). The 2-deoxy-2-fluoro substitution common to trisaccharides 7-9 renders these analogues resistant to enzyme action in two distinct ways. Firstly the fluorine serves as a non-nucleophilic isostere for the acceptor hydroxyl in studies with glycosyl transferases **GnT**-I and **GnT**-II (7 and 9, respectively). Secondly it should render trisaccharide 8 stable to hydrolysis by the **mannosidases** Man-II and Man-III by inductive destabilization of their oxocarbenium ion-like transition states. These analogues should be useful for structural studies on these enzymes.